Simplifying Email at UC Berkeley

A two year effort to retire aging on-premise email infrastructure

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Summary

UC Berkeley has recently embarked on a major email simplification program to increase the reliability of and decrease the costs associated with delivering email services to campus.

As a part of this program, we are working to eliminate older on-premise infrastructure while re-examining the architectural decisions that have been made over the past 25+ years with the goal of finding solutions that are simpler, less expensive, more reliable, and easier to maintain.
CalMail Email Service (early 2016)

- **Messages per day**
  - 1.7m total
  - 600k SPAM

- **Mailing lists**
  - 8k active
  - 28k total

- **Mail routing**
  - 167 domains

- **Forwarding addresses**
  - 170k alum
  - 400 retiree
 Incoming Email
- email is sent to an @berkeley account
- email is sent to an @lists.berkeley mailing list
- email is sent to an alumni/retiree @berkeley forwarding address

Outgoing Email
*most campus mail is sent directly from bMail (Google)
- campus system/user sends mail via authenticated CalMail SMTP
- campus system sends mail from non-routable IP address or relay

early 2016
Project Overview
Case for Change

The existing on-premise Enterprise Email Service is approaching end of life and needs to be replaced.

- operating systems for on-premise services will no longer be vendor supported after June 2017
- mailing list service runs on a custom platform that is not easily maintained and will be incompatible with Google, Yahoo & AOL’s delivery rules in July 2016
- mail sending & receiving services support complex routing rules that need to be re-evaluated including:
  - alumni & retiree email forwarding
  - unauthenticated & non-routable IP mail sending services
  - complex subdomain mail routing/redirect services
Purpose

Provide a sustainable Enterprise Email Service that:

✴ meets essential campus-wide needs
✴ minimizes security & performance risks
✴ eliminates redundant service options
Strategic Goals

Rely on Google as much as possible to sanitize, send and receive email

- use Google authenticated SMTP wherever possible
- route email directly to Google whenever possible
- use Google Groups for all mailing lists
- use groups, accounts & email alias instead of email redirects
Planned Changes
Migrate CalMail List Service with Google Groups

Replace existing mailing list service and integrate central groups management solution with Google Groups.

- allow user to **easily migrate** mailing lists
- offer new mailing list service using **Google Groups**
- **CalGroups integration** with Google Groups
- retire CalMail Lists servers (Mailman)
Provide Alumni & Retirees with Google Accounts

Allow alumni and retirees to “upgrade” email forwarding addresses to full Google accounts.

- allow recent & new alumni to keep Google accounts
- offer migration path to accounts for existing alumni
- offer migration path to accounts for staff retirees
- retire email forwarding services for alumni & retirees
Simplify & Manage Campus Outgoing Mail Services

Provide purposed SMTP services for campus systems that send Bulk mail or send from a non-routable campus IP address.

- migrate users & multifunction devices to Google SMTP
- migrate non-bulk, public IP systems to Google SMTP
- provide outgoing mail service for ~500 approved systems on non-routable (RFC-1918) networks via a Private IP SMTP service
- provide outgoing mail service for ~40 approved high volume systems via a Bulk SMTP service
- retire CalMail SMTP servers (Exim)
Route Centrally Managed Domains to Google

Simplify mail routing by retiring on-premise routing infrastructure and routing mail directly to Google accounts and groups.

- route inbound mail **directly to Google** for all domains
- convert existing redirects to **email aliases**
- allow domain **admins** to create groups and apply aliases
- retire **Proofpoint** email sanitation appliances
- retire **Sentrion** mail transfer agents
Incoming Email
- email is sent to an @berkeley account
- email is sent to an @lists.berkeley mailing list
- email is sent to an alumni/retiree @berkeley account

Outgoing Email
*only available for use by approved systems
- approved high volume system sends mail via Bulk SMTP service
- approved non-routable system sends mail via Private IP SMTP service
- campus system sends mail via Google SMTP
Project Team

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